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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,452	04/11/2001	Y. Tom Tang	PF-0619 USN	7669

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EXAMINER	
HELMS, LARRY RONALD	

ART UNIT	PAPER NUMBER
1642	

DATE MAILED: 02/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/807,452	TANG ET AL.	
	Examiner	Art Unit	
	Larry R. Helms	1642	

-- The MAILING DATE of this c mmunication appears on the cover sheet with the c rrespondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-44* is/are pending in the application.

4a) Of the above claim(s) *21,22 and 31-44* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *23-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Claims 1-20 have been canceled.

Claim 27 has been amended as well as non-elected claim 21.

2. Claims 21-22, 31-44 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions. Applicant timely traversed the restriction (election) requirement in Paper No. 11.

3. Claims 23-30 are under examination.

Comments Regarding Restriction Requirement

4. The response filed 11/5/03 states that unity of invention exists for claim of the polynucleotide of SEQ ID NO:31 which encodes SEQ ID NO:12 and this is related to Example 17 of Annex B of administrative instructions (see page 8 of response). This is again is not persuasive. Example 17 is a specific example and applicants claims do not corresponds to the example. The clams in the instant application are not just to a single DNA or polypeptide but to biological fragments and immunogenic fragments and to naturally occurring sequences that are 90% identical to SEQ ID NO:12. Again the polynucleotide is structurally distinct from the polypeptide as stated in the restriction requirement. The response states that applicants request that claims 31-33, 38, and 39 be rejoined and examined upon allowance of the claims drawn to polynucleotides of Group 28 under In re Ochiai, In re Brouer. In response to this the Examiner acknowledges the statement.

For these reasons the restriction requirement is deemed to be proper and is made **FINAL**.

5. Claims 21-22, 31-44 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions. Applicant timely traversed the restriction (election) requirement in Paper No. 11.

6. Claims 23-30 are under examination.

Specification

7. The disclosure is objected to because of the following informalities:

a. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed, such as polynucleotides encoding proliferation and apoptosis related proteins.

b. The amendment filed 11/5/03 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The amendment updated the first line of the specification to add an incorporation-by-reference. When a benefit claim is submitted after the filing of an application, the reference to the prior application cannot include an incorporation by reference statement of the prior application. See Dart Industries v. Banner, 636 F.2d 684,207 USPQ 273 (C.A.D.C. 1980).

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Objections

8. The objection of claims 23-29 are still objected to because of the following informalities: The claims are dependent on non-elected claims. Although the claims depend from non-elected claims, the claims will be examined with all the limitations of claims 21-22.

The response filed 11/5/-3 states that the polypeptide should be examined with the polynucleotide and as such amending the claims at this time would be premature (see page 10 of response). in response to this argument, as stated above unity of invention does not exist and as such the claims need to be amended.

Appropriate correction is required.

Rejections Withdrawn

9. The rejection of claim 27 under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter is withdrawn in view of the amendment to the claim.

Response to Arguments

10. The rejection of claims 23-30 under 35 U.S.C. 101 because the claimed invention is not supported by either a substantial asserted utility or a well established utility is maintained.

The response filed 11/5/03 has been carefully considured but is deemed not to be persuasive. The response states that the declaration of Dr. Bedilion describes some practical uses of the claimed invention in gene and protein expression monitoring and the claimed invention is a useful tool as used in probe in a cDNA microarray (see page 10-11 of response). The declaration has been carefully considured but is deemed not to be persuasive. As an aside, it is noted that Dr. Bedilion is a consultant for Incyte Pharmaceuticals, Inc., and thus is a concerned party. Regarding the merit of the argument, any new polynucleotide can be used in a microarray, and thus this asserted utility is not specific. Also, the disclosure that SEQ ID NO:12 is structurally related to TRE oncogene product does not render the asserted utility specific, since the specification does not establish that SEQ ID NO:31 is expressed in any diseased tissues in any way that is different from the way it is expressed in healthy forms of the same tissues. In other words, the specification does not disclose that SEQ ID NO:31 or SEQ ID NO:12 is expressed in tissues having cell proliferative or developmental disorders at altered levels or forms. Thus, it is not a target for drug development, toxicology studies, or disease diagnosis. Significant further research would have to be conducted to identify diseases states which correlate with altered levels or forms of the claimed polynucleotides. There is no doubt that cDNA microarray technology is an extremely valuable technique in gene expression monitoring, toxicology testing, and

drug efficacy testing. However, the claims are not drawn to the technique. The claims are directed to polynucleotides which have not been disclosed as being associated with any particular disease or condition by its being expressed at an altered level or form in diseased tissue as compared to the corresponding healthy tissue. Any such polynucleotide could be added to a microarray. Thus, this asserted utility is not specific. Determining the relationship between the claimed polynucleotides and any specific disease or disorder would require significant further research. Therefore, this asserted utility is also not substantial.

I. The applicable legal standard

Beginning at p. 11 of the response filed 11/5/03, applicants summarize case law on the utility requirement. The essential disagreement appears to be the interpretation of what constitutes a specific, substantial and credible utility, as will be explained more fully below.

II. Toxicology testing, drug discovery, and disease diagnosis are alleged to be sufficient utilities under 35 U.S.C. §§ 101 and 112, first paragraph

A. The uses of are sequence inventions for toxicology testing, drug discovery, and disease diagnosis are alleged as practical uses that confer specific benefits to the public:

Applicants argue at pages 13-17 of the reply filed 11/5/03 that the use of the claimed invention have specific, specific, substantial, real world utility by the use in toxicology testing, drug discovery, and disease diagnosis are practical uses that confer

specific benefits to the public. Applicant states that there is no dispute that the claimed invention is a useful tool in cDNA microarrays used to perform gene expression analysis. Applicants asserts that such is sufficient to establish utility for the claimed polynucleotide. This is not found to be persuasive. While the examiner agrees that any polynucleotide, including the claimed polynucleotides, can be used in a cDNA microarray, such does not confer patentable utility on the claimed polynucleotides. Since any polynucleotide can be used in a microarray, such a use is not specific to the claimed polynucleotides. Just as any orphan receptor can be used in an assay to screen for ligands, such does not confer patentable utility on a particular orphan receptor. Such can be done with any orphan receptor, and thus the asserted utility is not specific. Furthermore, since the specification does not disclose a correlation between any disease or disorder and an altered level or form of the claimed polynucleotides, the results of gene expression monitoring assays would be meaningless without significant further research. Therefore, the asserted utility is also not substantial.

In the absence of any disclosed relationship between the claimed polynucleotide or the protein that is encoded thereby and any disease or disorder, any information obtained from an expression profile would only serve as the basis for further research on the observation itself. "Congress intended that no patent be granted on a chemical compound whose sole 'utility' consists of its potential role as an object of use-testing." *Brenner v. Manson*, 148 USPQ at 696. The disclosure does not present a substantial utility that would support the requirement of 35 U.S.C. §101.

At page 16, applicant refers to Dr. Bedilion's discussion of the Brown et al. Patent (U.S. 5807522), attached to the declaration. Dr. Bedilion characterizes the patent as providing evidence that microarrays can be used in numerous genetic applications, including monitoring of gene expression in different tissue types, disease states, in response to drugs, and in response to potential toxins. This is not found to be persuasive. The Brown patent claims methods of forming microarrays. Microarray methods have patentable utility as a research tool, just like a scale or a gas chromatograph. However, what the research tool measures does not necessarily have patentable utility, such as the object being weighed by the scale, or the compound being analyzed by the gas chromatograph. Such is the situation at issue.

Applicant refers to other publications that discuss microarrays and gene expression technology with respect to drug screening and toxicology testing at pp. 16-18 of the reply. Again, this is not found to be persuasive, because the arguments and evidence merely show that microarray technology is important and useful to the scientific community. These publications do not show that the claimed invention has a patentable utility. The use of the claimed uncharacterized polynucleotides in such studies would have provided no more information than the use of any other orphan polynucleotide. The asserted utility for the claimed polynucleotide is not specific to the claimed polynucleotide. Due to the lack of disclosure of a correlation between the claimed polynucleotides and a particular disorder, the asserted utility is also not substantial, as discussed above.

B. The use of nucleic acids coding for proteins expressed by humans as tools for toxicology testing, drug discovery, and the diagnosis of disease is alleged as "well-established":

Beginning at p. 17 of the response filed 11/5/03, applicant argues that the claimed polynucleotides are useful as tools for toxicology testing, drug discovery, and the diagnosis of disease and that these uses are "well-established". Each of these uses will be addressed individually, because the facts and issues directed to each use are distinct and separable. First, Applicant argues that toxicology testing is a well-established utility and concludes that the claimed polynucleotides could be used in this manner and that the claimed invention possesses utility. However, for a utility to be "well-established" it must be specific, substantial and credible. In this case, all nucleic acids and genes are in some combination useful in toxicology testing as suggested in the response which states that the more genes that are available for use the more powerful the technique (see page 18 of the reply). However, the particulars of toxicology testing with the claimed polynucleotides are not disclosed in the instant specification. Neither the toxic substances nor the susceptible organ systems are identified. Therefore, this is a utility which would apply to virtually every member of a general class of materials, such as any collection of proteins or DNA, but is only potential with respect to the claimed polynucleotides. Because of this, such a utility is not specific and does not constitute a "well-established" utility. Further, because any potential diagnostic utility is not yet known and has not yet been disclosed, the utility is not substantial because it is not currently available in practical form. Moreover, use of

the claimed polynucleotide in an array for toxicology screening is only useful in the sense that the information that is gained from the array is dependent on the pattern derived from the array, and says nothing with regard to each individual member of the array. Again, this is a utility which would apply to virtually ever member of a general class of materials, such as any collection of proteins or DNA. Even if the expression of Applicants individual polynucleotides are affected by a test compound in an array for drug screening, the specification does not disclose any specific and substantial interpretation for the result, and none is known in the art. Given this consideration, the individually claimed polynucleotides have no "well-established" use. The artisan is required to perform further experimentation on the claimed material itself in order to determine to what "use" any expression information regarding this nucleic acid could be put.

C. The similarity of the polypeptide encoded by the claimed invention to another polypeptide of undisputed utility is asserted to demonstrate utility

At p. 19, Applicant argues that the utility of the claimed polynucleotide can be imputed based on the relationship between the polypeptide it encodes and another polypeptide of unquestioned utility. Applicant refers to Brenner (1998, PNAS USA 95:6073-6078) as evidence that the probability that two unrelated polypeptides share more than 40% sequence homology over 70 amino acid residues is exceedingly small. Applicant urges that the examiner must accept that the homology demonstrates utility unless evidence or sound scientific reasoning is brought forth that a person of ordinary skill in the art would doubt utility. Applicant criticizes the literature cited by the examiner

as disclosing some of the difficulties that may be involved in predicting protein function, since none suggests that functional homology cannot be inferred by a reasonable probability in this case. The argument is not found to be persuasive, because evidence that a person of ordinary skill in the art would doubt utility in this case has been brought forth. In addition, evidence was provided that proteins in a given class can have different functions. To clarify, the rejection sets forth that, *among related polypeptides* in the growth factor and hormone families, structural similarity is not predictive of functional similarity. For example, Vukicevic et al. (1996, PNAS USA 93:9021-9026) was cited in the rejection as disclosing that OP-1, a member of the TGF-β family of proteins, has the ability to induce metanephrogenesis, whereas closely related TGF-β family members BMP-2 and TGF-β1 had no effect on metanephrogenesis under identical conditions. OP-1 and BMP-2 are approximately 60% identical. It is noted that OP-1, BMP-2 and GDF-9 are all TGF-β family members. Kopchick et al. (U.S. Patent 5,350,836) was cited as disclosing several antagonists of vertebrate growth hormone that differ from naturally occurring growth hormone by a single amino acid. These pairs of polypeptides are 99.5% identical. Therefore, functional relatedness is not credible in the face of evidence in the art that structurally related polypeptides in for example the growth factor families are frequently dissimilar functionally.

D. Objective evidence is alleged to corroborate the utilities of the claimed invention

Beginning at p. 21, Applicant argues that a "real-world" utility exists if actual use or commercial success can be shown. Citing case law, Applicant urges that such a

showing is conclusive proof of utility. Applicant argues that a vibrant market has developed for databases containing all expressed genes, including those of Incyte, the real party at interest in the instant appeal. Applicant urges that Incyte's customers and the scientific community have acknowledged that Incyte's databases have proven valuable, and that the databases including the claimed polynucleotide would be even more valuable. Applicants arguments have been fully considered but are not deemed to be persuasive. The case law indicates that a rejection under 35 U.S.C. § 101 *for lack of operability* can be overcome by a showing of actual use or commercial success. The instant issue is whether or not the asserted utilities meet the three-pronged test for credibility, specificity, and substantiality. Such is not necessarily addressed by a showing of commercial success or actual use. As many products which lack patentable utility enjoy commercial success, are actually used, and are considered valuable. These include silly fads such as pet rocks, but also include serious scientific products like orphan receptors.

III. The patent examiner's rejections are alleged as being without merit

A. The precise biological role or function of an expressed polynucleotide is alleged as being not required to demonstrate utility

Beginning at p. 22 Applicant characterizes the examiner's rejection as being based on the grounds that, without information as to the precise biological role of the claimed invention, the claimed invention lacks specific patentable utility. Applicant characterizes the examiner's position as it is not enough that a person skilled in the art could use and would want to use the claimed invention either by itself or in a microarray,

but that Applicant also is required to provide a specific and substantial interpretation of the results generated in a given expression analysis. Applicant argues that specific and substantial interpretations regarding biological function may be required by technical journals, but are not necessary for patents. Applicant urges that the relevant question is not how or why the invention works, but whether the invention provides an identifiable benefit. Applicant argues that the present invention meets this test. Applicant argues that the threshold for patentable utility is low. Applicant urges that only throwaway utilities are insufficient, and that knowledge of biological function is not required. This is not found to be persuasive, as it mischaracterizes the examiner's position. The rejection never states that the precise biological role of a polynucleotide is required for it to possess patentable utility. If a polynucleotide is disclosed as being differentially expressed in a disease or disorder, even if nothing is known or hypothesized about the activities of the encoded polypeptide, then the polynucleotide has patentable utility as a disease marker and in the toxicology/drug screening microarray assays discussed at length by Applicant. However, if a specification does not disclose such information, as is the case here, then there is no patentable utility. If a compound causes the claimed polynucleotide to be expressed at a decreased level in a microarray, does that mean the compound is a potential drug or a potential toxin? That determination requires significant further research, and thus the asserted utility is not substantial. Also, any expressed polynucleotide *can* be used in a microarray; thus the unasserted utility is also not specific.

B. Membership in a class of useful products can be proof of utility

Beginning at p. 24, Applicant asserts that the examiner improperly refused to impute the utility of the growth factor homolog family to the claimed invention. Applicant urges that the case law requires only that the class not contain a substantial number of useless members. Applicant urges that the examiner has treated PROAP-12 as if it was in the general class of all polynucleotides, rather than the family of oncogene GTPase-activating protein class. Applicant concludes that the examiner has not presented any evidence that the oncogenic GTPase-activating class of proteins has any, let alone a substantial number, of useless members. This is not found to be persuasive. It is only after the filing date of the instant application that the identity of SEQ ID NO:12 as the PRC17 Rab GTPase activating protein was determined and its association with cancer (as indicated in Pei et al) and in addition the specification did not disclose the protein as having GTPase activity. Table 2 only states that SEQ ID NO:12 is identified as a TRE oncogene product and has a probable rabGAP domain. The protein is not associated with any disease or overexpression in any cells or induction of proliferation.

IV. By requiring the patent applicant to assert a particular or unique utility, it is alleged that the patent examination utility guidelines and training materials applied by the patent examiner misstate the law.

Beginning at p. 27, Applicants challenges the legality of the Patent Examination Utility Guidelines. Since a Primary Examiner has no authority to comment on the legality of the Guidelines, this issue will not be addressed.

V. To the extent the rejection of the invention under 35 U.S.C. § 112, first paragraph, is based on the alleged improper rejection for lack of utility under 35 U.S.C. § 101, it is alleged that the rejection must be reversed

As Applicant indicates at p. 29 of the Response, a rejection under § 112, first paragraph, may be affirmed on the same basis as a lack of utility rejection under § 101.

Therefore, for reasons set forth above, Applicants arguments and exhibits have been fully and carefully considered, but are not considered sufficient to rebut the prima facie case of lack of utility and it is believed that the rejections should be sustained.

11. The rejection of claims 23-30 under 35 U.S.C. 112, first paragraph, specifically, since the claimed invention is not supported by either a substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention is maintained.

The response filed 11/5/03 has been carefully considured but is deemed not to be persuasive.

As Applicant indicates at p. 29 of the Response, a rejection under § 112, first paragraph, may be affirmed on the same basis as a lack of utility rejection under § 101.

Therefore, for reasons set forth above, Applicants arguments and exhibits have been fully and carefully considered, but are not considered sufficient to rebut the prima facie case of lack of utility and it is believed that the rejections should be sustained.

12. The rejection of claims 23, 26-28, 30 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention is maintained.

The response filed 11/5/03 has been carefully considured but is deemed not to be persuasive. The response states that variants of SEQ ID NO:12 and 31 are described in the specification and one skill in the art would recognize variants that are 90% identical and naturally occurring amino acid sequences and the claims are defined by a recitation of chemical structure and the genus is not highly variant and "naturally occurring is fully supported in the specification (see pages 30-37). In response to this argument, while one can determine a polynucleotide or polypeptide that is 90% to SEQ ID NO:12 or 31, the issue is whether the specification describes such molecules or those that are naturally occurring. The term "naturally occurring" is not disputed but the specification does not describe any molecules other than SEQ ID NO:12 and 31 which would be "naturally occurring". The general knowledge in the art concerning naturally occurring sequences does not provide any indication of how the structure of one sequence is representative of unknown sequences. With the exception of SEQ ID

NO:12 and 31 the skilled artisan cannot envision the detailed structure of the encompassed molecules and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Thus, one of skill in the art would not understand that the applicant had possession of the claimed invention at the time the instant application was filed.

13. The rejection of claims 23, 26-28, 30 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention is maintained.

The response filed 11/5/03 has been carefully considured but is deemed not to be persuasive. The response states that the disclosure amply enables the claimed invention because one of skill in the art would know how to identify a polypeptide comprising a naturally occurring amino acid sequence that is 90% identical to SEQ ISD NO:12 or to SEQ ID NO:31 and one can use the claimed polynucleotides in expression profiling or in diagnosis (see page 38 of response). In response to this argument, while it may be true that one would know how to make a polypeptide or polynucleotide that is 90% identical to SEQ ID NO:12 and 31, one skill in the art would not know how to use such molecules because they would not necessarily function as those of SEQ ID NO:12 or 31. The rejection cited numerous examples where amino acid alterations result in alterations in the protein function and in addition, the use of the polynucleotide in

expression profiling would not be a substantial utility as stated above in the 101 rejection. The response states that there is a biological activity for the polypeptide as it is identified as Rab GTPase-activating domain in Table 2 and the protein has been identified as PRC17 by Pei. In response to this argument, Table 2 describes SEQ IS NO:12 as TRE oncogene product and has a probable rabGAP domain. There is nothing disclosed that SEQ ID NO:12 has a GTPase-activating domain. In addition, the Pei reference is from 2002 which was published after the filing date of the instant application. The response states that the specification describes a cell proliferation assay to determine the biological activity of SEQ ID NO:12 is on page 54. In response to this argument, the assay is described but is directed to any PROAP polynucleotide and not just to SEQ ID NO:31 or 12. The response further states that the claims are to polynucleotides not polypeptides and the cited art is not relevant (see page 40 of response). In response to this, the references are relevant because the claims are directed to DNA encoding a polypeptide that is 90% identical to SEQ ID NI:12 and as such alterations in the polynucleotide sequence can alter the amino acid sequence which would alter the protein function. The specification does not teach which amino acids in the protein sequence are needed for the function or activity of SEQ ID NO:12 and as such alterations can alter the function The response states that immunogenic fragments are known and methods to produce antibodies to any sequence or fragment is known (see page 41-42). In response to this, this argument is persuasive.

Conclusion

14. No claim is allowed.

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Larry R. Helms, Ph.D, whose telephone number is (703) 306-5879. The examiner can normally be reached on Monday through Friday from 7:00 am to 4:30 pm, with alternate Fridays off. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa, can be reached on (703) 308-3995. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

17. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center telephone number is (703) 308-4242.

Respectfully,

Larry R. Helms Ph.D.

703-306-5879

LARRY R. HELMS, PH.D
PRIMARY EXAMINER